

REMARKS

The application has been amended to place it in condition for allowance at the time of the next Official Action.

The specification has been amended to add section headings. No new matter is added.

Claims 1-19 were previously pending in this application. Claims 4 and 17 are cancelled and new claim 20 is added. Therefore, claims 1-3, 5-16 and 18-20 are presented for consideration.

The phrase "characterized in that" has been replaced with "wherein" or "comprising" to address the claim objection as to this phrase. In addition, the reference numerals are removed from the claims and the proper interrelationship of elements is recited without referring to the reference numerals.

Claims 1, 7-9 and 14-16 were rejected under 35 USC 102(b) as being anticipated by O'DELL 4,306,896. That rejection is respectfully traversed.

Claim 1 of the present invention relates generally to an air filtration plant, comprising a filter cartridge fitted with filter sleeves, wherein said sleeves are arranged vertically, and held stretched by appropriate means between two supporting structures, and wherein air arrives on the outer side of said sleeves and air filtered is evacuated by upper openings of the upper supporting structure.

As discussed in the Background of the Invention beginning at page 1, line 8 of the present application, this kind of filtration plant is for example described in documents EP-0 343 061, FR-2 514 669 or US-4 244 718.

As further disclosed, in this type of filtration plant, the usual mounting of filter sleeves is obtained by the following steps:

fastening their upper end on the openings of the upper supporting structure, usually thanks to deformable ring named "snap ring", and then

fastening and tensioning their lower end on the lower supporting structure.

However, the relevant installation and the maintenance operations of said sleeves require the operators to access to the space delimited between the supporting structures, in particular to fasten and to tension the lower end of the sleeves.

Moreover, the available space for the operator movement is limited; for maintenance, these operations are made moreover in a dusty and dangerous atmosphere.

In order to address these problems, claim 1 includes the following features that are indicated by way of example with the below reference numerals and that not disclosed by the prior art:

- the upper end (15) of the sleeves (6) is fitted with a structural element (36) for easier gripping thereof, manually or mechanically, and

- the second fastener, at the upper supporting structure (13), consists in an add-on member (38), configured to be located within said sleeves (6) (i.e. below its upper end) when the sleeves have been attached to the lower supporting structure (12), and stretched. The add-on member holds said sleeves (6) in this stretched condition by clamping against the internal contour (41) of the openings (40) of said upper supporting structure (13).

Thus, according to the invention, the upper gripping means and the upper fastener of the sleeves are thus distinct.

As a result, the present invention provides that the fastener in the openings of the upper supporting structure is suitable to be implemented at said filter sleeve, after fastening of said filter sleeve at its lower end by the corresponding fastener and after tensioning of said sleeve at its upper end by upwards vertical traction.

Thus, operators can perform most of the assembly and maintenance operations in the space located above the upper supporting structure, i.e. in an atmosphere which is less polluted (air filtered by the sleeves).

O'DELL does not disclose such a structure. Rather, O'DELL discloses an air filtration plant (2) comprising a filter cartridges (8) each constituted of a tubular filter bag (14) containing an elongated bag cage (15) to prevent the collapse due to the inward flow of gases through said filter bag.

Said filter cartridges (8) are arranged vertically, and their cages (15) are held by appropriate means (18, 19; 25, 26) between two supporting structures (25, 26; 5).

The closed lower end (22) of said cages (15) is provided with a docking pin (20) attached to a lower supporting structure formed by a first fastening mean (25, 26) constituted by gathering means (25) and retaining means (26).

The opened upper end of said cages (15) is attached to openings (17) provided in an upper supporting structure (5) in the form of a plate, by a second fastening mean (16) consisting in a ring (16) integral with the inner cage (15), sized to overlies the upper marginal edge of the plate aperture (17).

Thus, the filtration plant of O'DELL does not correspond exactly to sleeves without inner cage and stretched by traction operation between two fastening means.

Moreover, in O'DELL, the upper end of filter cartridges (8), constituted by the upper ring (16) of the cage (15), is intended to overlie the upper supporting structure (5).

On the contrary, the invention of claim 1 specifies that the upper end of the sleeve is provided with a structural

element (36) for easier gripping thereof. The fastening mean, at the upper supporting structure (13), consists in an add-on member (38), located within said sleeves (6) and thus independent from said upper end of the sleeves.

According to the present invention, the upper gripping mean and the upper fastening mean of the sleeves are thus distinct.

Furthermore, in O'DELL, the upper ring (16) of the cage (15) is fitted in a non removable and non adjustable manner with the sleeve.

However, according to the invention, the add-on member (38) is provided within the sleeve in a removable and adjustable manner, allowing the stretching adjustment of the sleeve.

As a result, in O'DELL and contrary to the invention, there is no possibility of upwardly pulling of the sleeves at their upper end, and locking of the traction applied.

In view of this, O'DELL does not anticipate claim 1. And claim 14 relative to the process must also be considered as new in regard of O'DELL.

Claims 2-6 and 17 were rejected under 35 USC 103(a) as being unpatentable over O'DELL in view of NODDIN 4,244,718. That rejection is respectfully traversed.

NODDIN is only cited with respect to features of the dependent claims. NODDIN does not overcome the shortcomings of O'DELL set forth above with respect to claim 1. Since claims 2-6

and 17 depend from claim 1 and further define the invention, these claims are believed to be patentable at least for depending from an allowable independent claim.

Indeed, NODDIN discloses a filter sleeve wherein the upper end is equipped with a "snap ring" to ensure its fixation on the edge of an opening provided in a supporting structure.

As noted above, such a fastening structure is well known in filtration plant whereof the sleeves are stretched downwardly at their lower end.

Said snap-ring is fastened in a non removable and non adjustable manner with the sleeve, which implies first the fastening of said upper end, and only then the fastening of its lower end to stretch said sleeve.

Thus, such a sleeve structure does not allow the adjustment of its stretching by an upwardly traction on the sleeve, after the sleeve has been attached to the lower supporting structure.

Moreover, in NODDIN, the snap-ring is also arranged in a non removable manner at the upper end of the sleeve, outside said sleeve and into an external terminal housing.

Thus, NODDIN does not disclose add-on member according to the invention, which is designed for being located within said sleeves when the sleeve have been attached to the lower supporting structure, and stretched. Such a structure allows holding said

sleeves in his stretched condition by clamping said sleeves against the contour of the openings of said upper supporting structure.

At last, in NODDIN, the upper end of the sleeves is constituted by the snap ring, allowing its gripping and its fastening on the upper structure.

On the contrary, the invention of claim 1 specifies that the upper end of the sleeve is provided with a structural element for easier gripping thereof. The fastener, at the upper supporting structure, comprises an add-on member, located within said sleeves and below said upper end and thus independent from said upper end of the sleeves.

For at least these reasons, the combination of O'DELL and NODDIN does not meet claim 1 and the claims that depend therefrom.

Claims 10-13, 18 and 19 were rejected under 35 USC 103(a) as being unpatentable over O'DELL in view of CLEMENTS et al. 6,676,722. That rejection is respectfully traversed.

CLEMENTS is only cited with respect to features of the dependent claims. CLEMENTS does not overcome the shortcomings of O'DELL set forth above with respect to claim 1. Since claims 10-13, 18 and 19 depend from claim 1 and further define the invention, these claims are believed to be patentable at least for depending from an allowable independent claim.

Indeed, CLEMENTS discloses an air filtration plant comprising a tubesheet (20) provided with a plurality of openings (26) intended to receive filter cartridges (16).

Each said cartridges (16) includes - an upper end cap (52), fastened to the tubesheet (20) thanks to a rotation operation of the whole cartridge, and - a lower end cap (54), free of any supporting structure.

CLEMENTS does not concern a filtration plant such as specified in claim 1, i.e. provided with sleeves fastened on an upper and a lower supporting structures.

In particular, in CLEMENTS, there is no stretching operation of the sleeves between two fastening means.

In CLEMENTS, a tool (84) can be used to facilitate rotation of the filter cartridge (16), to and from the locked position (col. 5, l. 37-39).

But, the cartridges are not stretched upwardly after fastening of their lower end, during mounting operation into the filtration plant; and this tool is provided only to exert rotation operation (and not a traction at the upper end of the sleeves such as specified in claim 10).

Moreover, said CLEMENTS tool is absolutely not provided with a seating element (46), configured to rest on the upper supporting structure as specified in claim 10.

Indeed, the disc (92) of the CLEMENTS tool is intended to cooperate only with the upper end of the cartridges (and not with the upper supporting structure as specified in claim 10).

As a result, the tool in CLEMENTS is not a tensioning tool, and does not meet the structural features of claim 10.

Thus, even if one were to consider the proposed combination of references, the resultant combination does not meet claim 10. Therefore, claim 10 is believed to be patentable independently of the patentability of claim 1.

New claim 20 is added. Support for claim 20 can be found in original claims 1, 2 and 4 as well as Figures 4A-4C.

In view of the present amendment and the foregoing remarks, it is believed that the present application has been placed in condition for allowance. Reconsideration and allowance are respectfully requested.

Should there be any matters that need to be resolved in the present application, the Examiner is respectfully requested to contact the undersigned at the telephone number listed below.

The Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any

overpayment to Deposit Account No. 25-0120 for any additional fees required under 37 C.F.R. § 1.16 or under 37 C.F.R. § 1.17.

Respectfully submitted,

YOUNG & THOMPSON

/Liam McDowell/

Liam McDowell, Reg. No. 44,231
209 Madison Street, Suite 500
Alexandria, Virginia 22314
Telephone (703) 521-2297
Telefax (703) 685-0573
(703) 979-4709

LM/fb